REMARKS

Claim 1-6 are currently pending in the instant application. In view of the following remarks, favorable reconsideration of this application is respectfully requested.

Applicants note with appreciation that the Examiner acknowledges that claim 4 is directed to allowable subject matter.

Claims 1-3, 5, and 6 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,703,904 to Aikawa et al. (hereinafter Aikawa). Applicants respectfully traverse.

Claim 1 relates to a high frequency oscillator that includes, *inter alia*, a substrate and first and second amplifiers arranged on a first surface of the substrate. The high frequency oscillator signal line of claim also includes first and second signal lines on the first surface, each signal line interconnecting an input end and an output end of said amplifiers. The high frequency oscillator signal line also includes ***a grounding conductor on a second surface of the substrate. An opening, where said ground conductor is removed, is bored in the second surface*** and a coplanar line structure is configured by arranging the first and second signal lines close to each other in an area of the opening.

In an embodiment of the present invention, an opening is formed in a ground conductor which is provided on the second principal surface of the substrate and constitutes the first and second microstrip line of the first and second oscillators. This opening is bored in the second principal surface and a coplanar line structure is configured by arranging the first and second signal lines of the first and second microstrip line close to each other in an area of the opening. In the portion of the coplanar line structure according to the present invention, no ground conductor is disposed on the substrate.

As described in the specification at page 7, lines 10-20, the high frequency components in the balanced mode due to the coplanar line structure travel in a reverse phase mode between adjoining signal line portions 8a and 8b. Thus they travel while generating an electric field from one adjoining signal line portion 8a to the other adjoining signal line portion 8b. When the potential of one adjoining signal line portion 8a is positive, the potential of the other adjoining signal line portion 8b is negative, and the two signal components are reverse in phase to each other. This means that the high frequency component in the reverse phase mode is made dominant by increasing length L of opening 10 constituting the coplanar line structure, and first amplifier 6a and second amplifier 6b come to oscillate reverse in phase to each other. The adjoining signal line portions 8a and 8b are electromagnetically coupled to each other directly. The electromagnetic coupling between the signal lines in the coplanar line structure portion is an important aspect of the present invention.

In the present invention, portions of microstrip-line type transmission lines are configured in a coplanar line structure in which the signal travels in a balanced mode, and a pair of oscillation close loops which are in reverse phases to each other are formed. The oscillation frequency is determined by a line length of the oscillation close loop. Since the in-phase components of the first and second oscillators is not able to pass through the coplanar line, the oscillation components of the first and second oscillators which pass through the signal line portions 8a and 8b in the coplanar line structure have reverse phases to each other.

In contrast, in the circuit shown in figure 4 of Aikawa, a slot line is connected to the upper and lower microstrip lines in order to allow both oscillators to oscillate in the reverse phases to each other. There is no direct electromagnetic coupling between the microstrip lines at the both ends of the slot line.

The coplanar line structure of figure 10A of Aikawa apparently has a center signal line and side ground conductors. The circuit of figure 10A of Aikawa requires ground conductors in the coplanar line structure while no ground conductor is arranged in the coplanar line structure of the present invention. Further, the upper and lower coplanar lines in figure 10A of Aikawa are connected by a slot line, not a coplanar line. The upper and lower coplanar lines are not directly coupled via an electromagnetic coupling.

The present invention, as illustrated in figure 4 and recited in claim 1, has signal lines of a microstrip line type with a ground plane which is formed on the reverse surface of the substrate with respect to the signal lines. In contrast, the circuit shown in of figure 10A of of Aikawa has signal lines of a coplanar line type with a ground plane which is formed on the same principal surface of the substrate as the signal lines. The Examiner asserts that stripline 5a of figure 10a of Aikiwa discloses a grounding conductor configuring a stripline as recited in claim 1. However, element 5a of Aikiwa is apparently an output line (see Aikiwa, col. 10, line 27). Additionally, there is no indication that element 5a is removed in an area of an opening in the second surface of the substrate. Therefore, for at least this additional reason, claim 1 is allowable.

Claims 2, 3, 5, and 6 all depend from claim 1 and are therefore allowable for at least the same reasons as claim 1 is allowable.

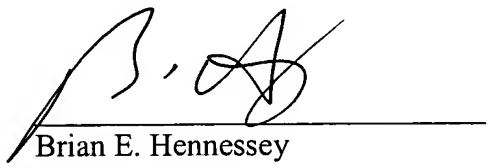
CONCLUSION

In view of the remarks set forth above, this application is believed to be in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully

requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,



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